Oral Presentations

Friday June 18th 2010

Summary & Highlights

08:30	**Plenary** *Ballroom EFG* Jérôme Chappellaz CNRS, France ***Gast Lecture:*** *'Greenhouse Gases and their Isotopes in Firn Air and Ice Cores'*
09:15	
09:30	**Oral Sessions**
12:30	**Lunch** (from 11:30) *Exhibit Hall A*
13:30	**Oral Sessions**

	200-A	200-B	200-C	200-D	200-E	300-A/B	300-C/D
	18d / 18e	17e	16k	15m	21a	01f / 02c	08c / 08d
09:30	Fenter	Luoma	Kalbitz	Dittrich	Filippelli	Lambert	Niu
09:45				Omelon			
10:00	Gilbert	Merrifield	Kramer	Tobler	Yan	Ohara	Ke
10:15	Kumar	Reinsch	Rumpel	Benzerara	Hudson-Edwards	Strongin	Gao
10:30	Mason	Amonette	Pett-Ridge		Hartnett	Ertem	Ravindra Kumar
10:45	Michel	Kádár	Nico	Doi	Bellucci	Hazen	Guo
11:00	Na	Levard	Plante	Chan	Dantu	Sverjensky	Xu
11:15	Skelton	von der Kammer	Zhuang		Parth	Ueno	Aulbach
11:30	Tribello	King	Papa	Dunham-Cheatham		Oehler	Riches
11:45	Gale		Magrini	Renshaw		Emry	Bellucci
12:00			Heal	Stewart		Smith	Guo
12:15	Di Tommaso			Sergent		Thomazo	Chen

	301-A	301-B	301-C	301-D/E	Ballroom A	Ballroom B	Ballroom C	Lecture
	14b / 14c	13h	10e	09f	03a	04g / 04f	04a	20j
09:30	Brantley	Chanton	Peucker-Ehrenbrink	Gislason	Kusuda	Catalano	Scherer	Zhang
09:45		Mayer	Fiege		Mysen		Collins	
10:00	Anderson	Mumford	Chevis	Dipple	Michael	Ilton	Usman	Levy
10:15	Buss	Aeschbach-Hertig	Ludois	Felmy	Filiberto	Juillot	Fox	Pedrero
10:30	Welch	Mayer	Godderis	Bickle	Zhang	Ilgen	Catalano	Mestrot
10:45	Dietrich	Solomon		Bodnar	Lundstrom	Morrison	Borch	Xie
11:00			Caro	Stefansson	Clog	Sakamaki	Sharma	Sjöstedt
11:15	Maher	Warrier	Brown	Ji	Simons	Buseck	Peretyazhko	Ross
11:30		Labasque	Teichert	Kaszuba	Peslier		O'Loughlin	
11:45	Navarre-Sitchler	Clark	Paris	Liu	Tenner	Vaughan	Bernier-Latmani	
12:00	Steefel	Weber	Wang	Rosenqvist	Jones	Janeczek	Hohmann	
12:15	Zhu	Hunt	Shen	Lu	Palot	Ebert	Sitte	

01f: Origins of Life: Environments, Mineral Surfaces and Prebiotic Chemistry

Session chaired by Dimitri A Sverjensky, Robert M Hazen & George Cody

09:30 **Keynote:** Mineral Surfaces and Prebiotic Polymerization
A557 *Lambert J-F*

10:00 Surface-Catalyzed Peptide Formation on Sulfide Minerals
A773 *Ohara S & Cody G*

10:15 **Invited:** Nitrogen Reduction on Metal Sulfide Surfaces Under Hydrothermal Conditions
A999 *Strongin D, Gordon A & Schoonen M*

10:30 **Invited:** Montmorillonite Catalysis and Potential of Charge Density in Proposing the Target Sites on Mars for Search of Organics
A271 *Ertem G, Schuhmann R, Steudel A, Emmerich K & Hazen R*

10:45 Clay Mineral Evolution
A389 *Hazen R, Bish D, Elmore S & Sverjensky D*

11:00 Attachment of Acidic Amino Acids to Mineral Surfaces: Implications for Prebiotic Chemistry
A1011 *Sverjensky D, Jonsson C, Jonsson C, Estrada C, Lee N, Klochko K, Cleaves J, Hazen R, Parikh S, Kubicki J & Sparks D*

Session 02c follows this session in this room.
For details see page 267.

02c: Life Before the Rise of Oxygen

Session chaired by Dominic Papineau & Malcolm Walter

11:15 **Keynote:** Stable Isotopic Fingerprints of Greenhouse Gasses Before the Rise of Oxygen
A1062 *Ueno Y*

11:30 Biological Diversity in the Archean: New Results from NanoSIMS
A771 *Oehler D, Robert F, Walter M, Sugitani K, Meibom A, Mostefaoui S & Gibson E*

11:45 Vanadium: A New Biomarker of Ancient Life
A266 *Emry J, Olcott Marshall A & Marshall C*

12:00 Evidence for Dissimilatory Manganese Reduction and Availability of Free Molecular Oxygen during Deposition of Mesoarchean Witwatersrand-Mozaan Strata
A973 *Smith AJB, Beukes NJ, Gutzmer J & Cochrane JM*

12:15 Late Archean Oceanic Redox Fluctuations Revealed by Iron Speciation in the 2.73Ga Old Tumbiana Formation
A1042 *Thomazo C, Oeser M, Strauss H & Philippot P*

03a: Volatiles in Earth & Planetary Interiors

Session chaired by Erik H Hauri, Rajdeep Dasgupta, Alison Shaw, Adrian Jones & Justin Filiberto

09:30 Geochemical Modeling of Slab-Derived Fluids
A550 *Kusuda C, Iwamori H, Kazahaya K, Morikawa N, Takahashi M, Takahashi H, Ohwada M, Ishikawa T, Tanimizu M & Nagaishi K*

09:45 Speciation and Solubility of Reduced C-O-H Fluids in Coexisting Fluids and Silicate Melts Determined *in situ* to 1.45 GPa and 800˚C
A743 *Mysen B, Yamashita S & Fogel M*

10:00 Cl/H_2O of Mantle-Derived Magmas: Relation to Seawater Salinity
A705 *Michael P & Escrig S*

10:15 Effect of Chlorine on Near-Liquidus Phase Equilibria of Basalts
A291 *Filiberto J, Dasgupta R & Treiman AH*

10:30 Oxygen Diffusion in Hydrous Silicate Melts
A1217 *Zhang Y*

10:45 Redistribution of Elements and Isotopes in Silicates by Diffusion of Dissolved Water in a T Gradient
A641 *Lundstrom C & Bindeman I*

11:00 An Isotopically Distinct Hydrogen Reservoir in the South Pacific Mantle
A183 *Clog M, Cartigny P, Aubaud C & Dosso L*

11:15 Relationship between Water and Hydrogen Isotopes in Mantle End-Members
A964 *Simons K, Dixon J & Kingsley R*

11:30 Controls of H Incorporation in Pyroxenes and Garnets from FTIR Data on Kaapvaal Craton Xenoliths
A808 *Peslier A, Woodland A & Lazarov M*

11:45 H_2O Storage Capacity of Olivine from 5-13 GPa. Consequences for Dehydration Melting Above the Transition Zone
A1037 *Tenner T, Ardia P, Hirschmann M & Withers A*

12:00 Carbon-Rich Melts in the Deep Mantle
A478 *Jones A*

12:15 Large Exchange Through the 660km Discontinuity: Evidence from C- and N- Isotopes in Super-Deep Diamonds
A787 *Palot M, Cartigny P, Harris J, Stachel T & Kaminsky F*

04a: Chemical and Biological Processes at Mineral Surfaces: Influence on Contaminant Dynamics

Session chaired by John Bargar, Marc Michel, David Singer & Per Persson

09:30 **Invited:** Fe(II)-Fe(III) Electron Transfer in Fe Oxides and Clays: Implications for Contaminant Transformations
A920 *Scherer M, Gorski C, Schaefer M, Latta D, O'Loughlin E, Boyanov M & Kemner K*

09:45 Is There a Link between Fe(III) Oxide Reactivity, Fe(II)-Catalysed Crystallisation and U(VI) Reduction?
A186 *Collins RN, Payne TE & Waite TD*

10:00 Magnetite Formation via FeII Induced Mineralogical Transformations of Ferric Oxyhydroxides
A1067 *Usman M, Hanna K, Abdelmoula M & Ruby C*

10:15 Fe(II) Uptake and Transformation on Uranium Contaminated Sediment from the Rifle IFRC Field Site
A302 *Fox P, Davis J & Kukkadapu R*

10:30 Fe(II)-Induced Structural Transformations of Hematite Surfaces and their Impact on Contaminants
A150 *Catalano J, Fenter P, Park C, Rosso K, Frierdich A & Otemuyiwa B*

10:45 Redox Transformation of Arsenic by Fe(II)-Activated Goethite: Impact of Humic Acids and Fe(II)
A104 *Borch T, Amstaetter K, Larese-Casanova P, Posth N & Kappler A*

11:00 Influence of Humic and Fulvic Acid on Arsenic Transport in Columns Filled with Ferrihydrite-Coated Sand
A941 *Sharma P, Rolle M, Kocar B, Fendorf S & Kappler A*

11:15 Reactions of Tc with Fe(II) and O_2 in Hanford Redox-Sensitive Sediments
A807 *Peretyazhko T, Zachara J, Kukkadapu R, Liu C, Heald S, Resch T, Arey B, Wang C & Plymale A*

11:30 Effects of Structural Phosphate on the Microbial Reduction of Iron Oxide and Secondary Mineralization Product Formation and Reactivity
A769 *O'Loughlin E, Boyanov M, Cook R, Gorski C, Mishra B, Scherer M & Kemner K*

11:45 **Invited:** Non-Uraninite Products for Microbial U(VI) Reduction
A84 *Bernier-Latmani R, Dalla Vecchia E, Junier P, Lezama J, Veeramani H, Suvorova E, Bargar J, Alessi D, Sharp J, Wigginton N & Stubbs J*

12:00 Molecular Mechanisms of As-Binding to Biogenic Iron(III) (Hydr)oxides Precipitated by the Nitrate-Reducing Iron(II)-Oxidizer *Acidovorax sp.* Strain BoFeN1
A409 *Hohmann C, Morin G, Brown Jr. G, Obst M, Benzerara K & Kappler A*

12:15 Nickel Sulfide Formation by a Sulfate-Reducing Consortium Originating from Heavy Metal Polluted Creek Soil
A968 *Sitte J, Pollok K, Finster K, Löffler S, Burkhardt E-M, Langenhorst F, Büchel G & Küsel K*

(Session 04a continues on Friday 18th PM on page 294)

04f: Atmospheric Dust

Session chaired by Reto Gieré, Bernard Grobéty & Peter Stille

11:15 **Keynote:** Aerosol Particles as Viewed Using Transmission Electron Microscopy
A132 *Buseck P*

11:45 Evidence of Internal Mixing of African Dust and Biomass Burning Particles by Individual Particle Analysis Using Electron Beam Techniques
A1076 *Vaughan D, Hand V, Capes G, Formenti P, Haywood J & Coe H*

12:00 **Invited:** Mineralogy of Tropospheric Dust in Industrial Regions – A Case Study of Upper Silesia, Poland
A457 *Janeczek J & Jablonska M*

12:15 **Invited:** Electronmicroscopic Individual Particle Analysis of Ice Nuclei
A257 *Ebert M, Worringen A & Weinbruch S*

(Session 04f continues on Friday 18th PM on page 295)

04g: Clays and Trace Metals in the Environment

Session chaired by Thierry Allard & Paul Bertsch

09:30 **Keynote:** Uranyl Adsorption onto Montmorillonite: Complexity and Ongoing Challenges
A150 *Catalano J & Brown Jr. G*

10:00 **Invited:** Incorporation of Uranium by Oxides and Phyllosilicates: Effects on Redox and Retention
A444 *Ilton E, Kerisit S & Felmy A*

10:15 **Invited:** Importance of Phyllosilicates and Fe/Mn Oxyhydroxides on the Distribution of Ni and Cr along a Lateritic Soil in New Caledonia
A484 *Juillot F, Fandeur D, Fritsch E, Morin G, Ambrosi J-P & Brown Jr. G*

10:30 As(III) Oxidation in the Presence of Reduced and Oxidized Nontronite NAu-1 Under O_2 and N_2 Atmosphere
A443 *Ilgen A & Trainor T*

10:45 Accumulation of Cr and Ni in Clays and Nanocrystalline Iron Oxides from Ultramafically-Derived Sediments in Northern California, USA
A728 *Morrison J, Goldhaber M, Hooper R & Diehl S*

11:00 Nanoscale Process in the Alteration of Bentonite-Iron System Under the Hyper Alkaline Conditions
A900 *Sakamaki K & Utsunomiya S*

Session 04f follows this session in this room.
For details see page 271.

08c: Geochemical Processes in Continental Collision Zones III

Session chaired by Lingsen Zeng & Shuguang Song

09:30 **Keynote:** Continental Crust Growth as a Result of Continental Collision: Ocean Crust Melting and Melt Preservation
A763 *Niu Y, Zhao Z, Zhou S, Zhu D, Dong G, Mo X, Xie G & Dong X*

10:00 Magnesium Isotopic Composition of A-Type Granites from NW India-Asia Collision Zone, Xinjiang, China
A501 *Ke S, Teng F-Z, Mo XX & Luo ZH*

10:15 Mid-Eocene (42-44 Ma) Melting of Overthickened Crustal Materials in the Himalayan Collisional Belt
A317 *Gao L-E, Zeng L & Xie K*

10:30 Geochemistry of Granitoids of the Kerala Khondalite Belt, Southern India – Magmatic Petrogenesis in an Arc-Accretion Setting
A851 *Ravindra Kumar G & Sreejith C*

10:45 U-Pb Zircon Ages and Hf Isotopic Compositions of the Magmatic and Metamorphic Rocks from Nyingchi Group in Eastern Himalayan Syntaxis and their Geological Implications
A365 *Guo L, Zhang H, Xu W & Shi Z*

Session 08d follows this session in this room.
For details see page 274.

08d: Formation and Destruction of Cratons

Session chaired by Stephen Foley & Shan Gao

11:00 Thermo-Tectonic Destruction of the North China Craton: An Overview
A1163 *Xu Y*

11:15 Formation of Cratonic Subcontinental Lithospheric Mantle from Hybrid Plume Sources
A37 *Aulbach S, Stachel T, Heaman L, Creaser R & Shirey S*

11:30 Evolution of the Siberian Platform; Constraints from Diamondiferous Xenoliths of Nyurbinskaya
A869 *Riches AJV, Liu Y, Day JMD, Spetsius ZV & Taylor LA*

11:45 Thermal History and Origin of the Tanzanian Craton from Pb Isotope Thermochronology of Feldspars from Lower Crustal Xenoliths
A75 *Bellucci J, McDonough W & Rudnick R*

12:00 Multiple Growth of Titanite in Response to Lower Crustal Thickening and Recycling
A364 *Guo J, Gao S, Xu W, Hu Z, Yuan H, Liu Y & Zong K*

12:15 Petrology and Os-Nd-Sr Isotopes of the Gaositai Alaskan-Type Ultramafic Complex from the Northern North China Craton
A165 *Chen B, Tian W & Suzuki K*

09f: Geochemistry of CO_2 Sequestration: Theory, Modeling, and Field and Laboratory Results

Session chaired by Chen Zhu, Eric Oelkers, John Kaszuba & Juerg Matter

09:30 **Keynote:** Mineral Seqestration of CO_2 in Basalt – The CarbFix Project
A336 *Gislason S, Wolff-Boenisch D, Stefansson A, Alfredsson H, Oelkers E, Gunnlaugsson E, Sigurdardottir H, Sigfusson B, Aradottir E, Broecker W, Matter J, Stute M & Axelsson G*

10:00 **Keynote:** Insights for CO_2 Sequestration from Mineral-Fluid-Gas Interactions in Mine Waste
A235 *Dipple G, Wilson S, Power I, Barker S, Fallon S & Southam G*

10:15 The Role of Intermediates during Metal Carbonation of Forsterite in Wet Supercritical CO_2
A284 *Felmy A, Kwak J, Hu J, Rosso K, Wang C, Hoyt D, Ilton E, Rustad J & Dixon D*

10:30 Thermodynamics of Fluid-Rock Interactions with a Metamorphic Petrology Point of View: Example with H_2O – CO_2 – NaCl Mixtures
A88 *Bickle MJ, Dubacq B & Evans K*

10:45 Volumetric Constraints on CO_2 Storage in Saline Aquifers
A99 *Bodnar R, Steele-MacInnis M & Rimstidt JD*

11:00 H_2S and CO_2 Sequestration in Geothermal Systems
A991 *Stefansson A, Arnorsson S, Gunnarsson I, Gysi A, Kaasalainen H & Gunnlaugsson E*

11:15 Modeling of Phase Equilibria for the CO_2-H_2S-H_2O-Salts Systems
A463 *Ji X & Zhu C*

11:30 A Natural Analogue in Southwest Wyoming for Geologic Co-sequestration of Carbon and Sulfur
A498 *Kaszuba J, Navarre-Sitchler A, Thyne G & Chopping C*

11:45 Multi-Phase Reactive Flow and Transport Modeling of CO_2 Sequestration in the Mt. Simon Sandstone Formation, Midwest USA
A610 *Liu F, Lu P, Xiao Y & Zhu C*

12:00 Solubility of Carbon Dioxide in Rock-Buffered Aqueous Fluids
A882 *Rosenqvist J, Rochelle C & Yardley B*

12:15 Experiments of CO_2-Brine-Feldspars/Sandstone/Shale Interactions: Implications for Geological Carbon Sequestration
A636 *Lu P, Liu F, Hedges S, Griffith C, Soong Y & Zhu C*

(Session 09f continues on Friday 18th PM on page 299)

10e: Chemical and Isotopic Perspectives on Global Elemental Cycling in Modern and Ancient Systems

Session chaired by Matthew Fantle & Edward Tipper

09:30 Flux and $^{87}Sr/^{86}Sr$ of Land-Derived Sr to Seawater – Interpreting the Marine Sr Isotope Record
A814 *Peucker-Ehrenbrink B*

09:45 Strontium Isotopes in Chilean Rivers: The Flux of Unradiogenic Continental Sr to Seawater
A291 *Fiege K, Miller CA, Robinson L, Figuero R & Peucker-Ehrenbrink B*

10:00 Submarine Groundwater Flux of Nd to Coastal Waters
A174 *Chevis D, Johannesson K, Burdige D, Cable J, Martin J & Roy M*

10:15 Sr Isotopes in Banded Iron Formation Carbonates: Disequilibrium with Ancient Seawater
A640 *Ludois J, Heimann A, Johnson C, Beard B, Valley J, Roden E, Spicuzza M & Beukes N*

10:30 **Keynote:** Element Cycling and the Evolution of the Earth System
A339 *Godderis Y, Donnadieu Y, Williams J, Roelandt C, Schott J, Pollard D, Pierrehumbert R & Brantley S*

11:00 **Invited:** A ^{40}K-^{40}Ca Perspective on the Oceanic Calcium Cycle
A143 *Caro G, Papanastassiou D & Wasserburg G*

11:15 Calcium Isotope Fractionation in Ocean Ridge Hydrothermal Systems
A125 *Brown S, DePaolo D, Turchyn A & Alt J*

11:30 Ca-Isotopes of Early Diagenetic Dolomite and Porewater from the Peru Margin
A1033 *Teichert B, Meister P, Ockert C & Gussone N*

11:45 Did Evaporites Record the Boron Isotopic Composition of Seawater?
A792 *Paris G, Gaillardet J & Louvat P*

12:00 U-Th Systematics in Deep-Sea Red Clays
A1107 *Wang X, Broecker W, Edwards L & Cheng H*

12:15 Germanium/Silicon Ratios of Diagenetic Chert Nodules in the Ediacaran Doushantuo Formation, South China
A945 *Shen B, Lee C-T & Xiao S*

(Session 10e continues on Friday 18th PM on page 301)

13h: Gases in Groundwater

Session chaired by Werner Aeschbach-Hertig & Richard Amos

09:30 **Invited:** SF_6 Tracers and the Subsurface Attenuation of Nutrients
A160 *Chanton J, Harden H, Hicks R, Katz B & Wade E*

09:45 **Invited:** Noble Gas Composition and Reactive Gas Fluxes: Indicators for Natural Attenuation Processes in Contaminated Aquifers
A682 *Mayer KU, Jones K, Kipfer R, Sihota N & Singurindy O*

10:00 Transport of Volatile Contaminants in Groundwater by Gas Expansion and Mobilization Above a Dense Nonaqueous Phase Liquid Pool
A737 *Mumford KG, Smith JE & Dickson SE*

10:15 Paleoclimate Information from Degassed Groundwaters
A4 *Aeschbach-Hertig W, Blaser P & Walraevens K*

10:30 A Multi Tracer Study of Groundwater Origin and Transit-Time in the Fore Deep Basin of the Southern Alps
A682 *Mayer A, Sueltenfuss J, Travi Y, Rebeix R, Conchetto E, Le Gal La Salle C, Miche H, Purtschert R & Claude C*

10:45 **Keynote:** Gases in Managed Aquifer Recharge
A976 *Solomon DK & Heilweil VM*

11:15 Galapagos Islands – Tracing a Volcanic Groundwater System Using Noble Gases
A1115 *Warrier RB, Castro MC, Hall CM & d'Ozouville N*

11:30 Investigation of Matrix Fluids in Fractured Aquifers Through Various Gas Analyses
A552 *Labasque T, Aquilina L, Bour O, De Montety V & Fourre E*

11:45 **Invited:** Excess Air Formation Below Spreading Ponds
A183 *Clark J*

12:00 Process Oriented Modeling of Gas Evolution in Iron-Based Permeable Reactive Barriers
A1120 *Weber A, Ruhl AS & Amos RT*

12:15 Noble Gases in the Natural Gas of Western New York and North-Central Pennsylvania: Natural Analogs for Evaluating Possible Impacts of Carbon Sequestration and Horizontal Drilling
A438 *Hunt AG, Laughrey CD & Poreda RJ*

14b: Lithologic and Erosional Influences on Critical Zone Processes

Session chaired by Heather Buss & Clifford Riebe

09:30 **Keynote:** The Movement of Rock Particles Up and Water Pores Down Through Weathering Bedrock
A118 *Brantley S, Jin L, Ma L, Maya B, Ray F, Gernot R, Dave C & Alexis N-S*

10:00 Slope Aspect and Weathering in the Colorado Front Range
A21 *Anderson S, Blum A, Hinckley E-L, Lee J, Gilbert R, Trotta J & Dethier D*

10:15 Mineral Nutrient Profiles on Differing Lithologies at Three Tropical Critical Zone Sites
A133 *Buss H, Dessert C, Gaillardet J, White A, Vivit D & Blum A*

10:30 Impact of Trace Mineral Phases on the Total Solute Flux from Andesitic Volcanics
A1124 *Welch SA, Goldsmith ST & Carey AE*

10:45 **Keynote:** Bedrock Matters
A232 *Dietrich W*

Session 14c follows this session in this room.
For details see page 279.

14c: Hydrogeochemical Modeling of Reaction Networks in the Critical Zone

Session chaired by Chen Zhu & Carl Steefel

11:15 **Keynote:** Biogeochemical Reaction Networks Involved in Weathering Processes
A658 *Maher K & Steefel C*

11:45 Importance of Porosity in Saprolite Formation on Basalt
A748 *Navarre-Sitchler A, Steefel C & Brantley S*

12:00 Modeling Mineral Aging in the Critical Zone
A990 *Steefel C*

12:15 Implications of the New Hypothesis on the Apparent Discrepancy between Field – Lab Feldspar Dissolution Rates on Modeling Reactive Transport in the Critical Zone
A1232 *Zhu C, Lu P & Ganor J*

15m: Microbial Biominerals: Structure, Formation and Applications

Session chaired by Danielle Fortin, Vernon Phoenix & Rizlan Bernier-Latmani

09:30 **Invited:** Microbe-Mineral Interfaces in Biofilms as Seen by Atomic Force Microscopy Combined with Raman and X-Ray Spectroscopy
A236 *Dittrich M, Vasconcelos C & Dorozhkin P*

09:45 **Invited:** Evaluaton of Calcium Binding and Carbonate Precipitation by Cyanobacteria in Aquatic and Terrestrial Habitats by XAFS
A777 *Omelon C, Power I & Southam G*

10:00 The Potential of Groundwater Microbial Communities to Induce Calcite Precipitation
A1046 *Tobler DJ & Phoenix VR*

10:15 **Medal:** Study at the Nanoscale of Iron Biomineralization on Organic Fibres by a Phototrophic Iron-Oxidizing Bacterium
A81 *Benzerara K, Miot J, Obst M, Kappler A, Hegler F, Guyot F & Morin G*

10:45 Characterization of a Silica-Induced Protein in *Thermus Thermophilus* Related to Biosilicification
A238 *Doi K, Fujino Y, Ohshima T & Yokoyama T*

11:00 **Keynote:** Deciphering Microbial Roles in Mineral Formation: An Interdisciplinary, Microscopy-Based Approach
A157 *Chan C*

11:30 Passive Cell Wall Biomineralization: A Universal Phenomenon?
A251 *Dunham-Cheatham S & Fein J*

11:45 **Invited:** Microbial Biominerals: Role in Radionuclide Remediation
A863 *Renshaw J, Handley-Sidhu S & Macaskie L*

12:00 Mechanisms of Biogenic Uraninite Oxidation in the Presence of Fe(III)(hydr)oxides
A994 *Stewart B & Peyton B*

12:15 Biomineralization of Fe^{II}-Fe^{III} Species in Porous Heterogeneous Medium of Sand/Iron Oxyhydroxide/Bacteria
A935 *Sergent A-S, Jorand F & Hanna K*

(Session 15m continues on Friday 18th PM on page 306)

16k: Molecular-Scale Interactions of Organic C with Mineral Soils

Session chaired by Melanie A Mayes, Markus Kleber, Jim Amonette, Georg Guggenberger & Stan Wullschleger

09:30 **Keynote:** Interactions of Organic Matter with Minerals – Ultimate Stabilization in Soils?
A489 *Kalbitz K & Mikutta R*

10:00 Organic Matter-Mineral Interactions with Depth Across a Substrate-Age Gradient in Hawai'i
A537 *Kramer M, Chadwick O & Thompson A*

10:15 **Invited:** Composition of Organic Matter Stabilised by Mineral Interactions in Subsoil Horizons
A892 *Rumpel C*

10:30 **Invited:** Visualizing Organic Matter Biogeochemistry at the Microaggregate Scale: Lessons from STXM-SIMS
A813 *Pett-Ridge J, Keiluweit M, Kleber M, Myrold D, Nico P & Weber P*

10:45 The Speciation of Organic Matter in Soil Mineral Organic Associations – Inference from STXM and N, C and Fe NEXAFS
A758 *Nico P, Keiluweit M, Kleber M, Hatton P-J, Zeller B & Derrien D*

11:00 Thermal Analysis of Organo-Mineral Complexes with Increasing Carbon Loadings
A820 *Plante A, Fernandez J, Feng W, Aufdenkampe A & Six J*

11:15 Organic Matter Preservation due to Pore-Scale Interactions between Organic Matter and Water in Soil Microaggregates
A1235 *Zhuang J, McCarthy J & Perfect E*

11:30 Nanoscale Structure of Organic Matter Could Explain Soil Organic Matter Recalcitrance
A789 *Papa G & Adani F*

11:45 Rapid Identification and Quantification of Soil Organic Carbon Forms Using Pyrolysis Molecular Beam Mass Spectrometry
A657 *Magrini K, Davis M, Follett R, Hoover C & Evans R*

12:00 Preferential Sorption of Dissolved Organic Matter onto Mineral Soils due to Soil Type
A393 *Heal K, Mayes M, Amonette J, Phillips J & Jagadamma S*

17e: Biotic and Abiotic Transformations and Effects of Manufactured Nanomaterials – Fundamental Environmental Aspects

Session chaired by Jamie Lead, Simon Apte & Gregory V Lowry

09:30 **Keynote:** Quantitative Assessment of the Bioavailability and Toxicity of Nanometal Particles in Aquatic Environments: New Methodologies
A644 *Luoma S, Croteau M-N, Dybowska A, Misra S, Guo T, Rainbow P & Valsami-Jones E*

10:00 The Size Related Toxicity of Cerium Oxide Nanoparticles
A700 *Merrifield RC, Cole P & Lead JR*

10:15 Transformation Products from Inorganic Ligand Promoted Oxidation/Dissolution of Silver Nanoparticles
A859 *Reinsch B, Ma R, Kim C & Lowry G*

10:30 Adsorbate Effects on Aqueous Aging of Nano-Sized Zerovalent Iron (nZVI) Particles
A17 *Amonette J, Nachimuthu P, Russell C, Baer D, Tratnyek P, Dohnalkova A, Wang C & Nurmi J*

10:45 The Influence of Irradiation and Aging on Nano-Iron Versus its Bulk Analogue in Natural Seawater
A487 *Kádár E, Lead J, Mitov S, Widdicombe S & Readman JW*

11:00 Silver Nanoparticles Sulfidation
A584 *Levard C, Michel M & Brown G*

11:15 Testing Nanoparticles for their Environmental Behaviour
A1088 *von der Kammer F, Ottofuelling S & Hofmann T*

11:30 **Invited:** Effects of Surfactant Coating on the Fate of Engineered Oxide Nanoparticles in Simulated Wastewater Treatment
A460 *Jarvie H, Al-Obaidi H, King S, Bowes M, Lawrence MJ, Drake A, Green M & Dobson P*

18d: Pushing Experimental and Computational Limits: A Prospective Look at Mineral-Fluid Interfaces

Session chaired by Steven R Higgins, Tom Trainor & Andrew Stack

09:30 **Keynote:** Imaging Interfacial Topography and Reactivity with X-Rays
A287 *Fenter P, Lee SS, Park C, Zhang Z & Sturchio N*

10:00 **Invited:** Observing Iron Redox Dynamics at the Nanosecond Scale with Time-Resolved X-Ray Spectroscopy
A330 *Gilbert B, Katz J, Zhang H, Banfield J, Falcone R & Waychunas G*

10:15 Comparison of Vibrations of Water on Rutile and Cassiterite Surface
A546 *Kumar N, Kent P, Bandura A, Kubicki J & Sofo J*

10:30 First Principles Modeling Studies of Cation Adsorption at Oxide-Water Interfaces
A675 *Mason S, Iceman C, Trainor T & Chaka A*

10:45 **Keynote:** Cation Vacancies and Lattice Strain in Nano-Sized Ferrihydrite Reveal Clues to Surface Structure
A706 *Michel FM, Barrón V & Brown Jr GE*

11:00 **Invited:** Quantify Nanoscale Surface Properties Using Advanced Scanning Probe Microscopy
A743 *Na C & Yu Q*

11:15 A Combined Computational/Experimental Approach to Understanding the Quartz/Water Interface
A969 *Skelton A, Kubicki J, Fenter P, Van Duin A, Wesolowski D & Cummings P*

Session 18e follows this session in this room.
For details see page 284.

18e: Modeling of Nucleation and Growth Processes in Aqueous Environments

Session chaired by Devis Di Tommaso & Sebastien Kerisit

11:30 Using Molecular Dynamics to Understand the Early Stages of Calcium Carbonate Formation
A1055 *Tribello G*

11:45 **Keynote:** Towards Accurate Modeling of the Growth and Nucleation of Carbonates
A844 *Raiteri P, Gale J, Quigley D & Rodger M*

12:15 Modelling the Nucleation of Metal Carbonates: The Importance of the Hydration Shell in the Monomer Formation
A236 *Di Tommaso D & de Leeuw NH*

(Session 18e continues on Friday 18th PM on page 309)

20j: Trace Element Speciation and Reactivity: Advanced Analytical and Operational Methods

Session chaired by David Point, David Amouroux, Holger Hintelmann & Olivier Clarisse

09:30 **Keynote:** Obtaining *in situ* Kinetic and Speciation Information for Trace Metal Complexes in Freshwater
A1205 *Zhang H, Davison B, Warnken K, Galceran J & Puy J*

10:00 Does the Chelex Resin in DGT Devices Really act as a Perfect Planar Sink for Metals? Kinetic Limitations of DGT Measurements
A586 *Levy J, Zhang H, Davison W, Puy J & Galceran J*

10:15 Investigation of Hg Species Binding Biomolecules in Dolphin Liver: Use of Isotopic Tracers for Sample Treatment Optimization
A801 *Pedrero Z, Mounicou S, Davis WC, Monperrus M & Amouroux D*

10:30 Arsenic Biovolatilization from Soil – A Global Phenomenon?
A703 *Mestrot A, Plantevin T, Hossain M, Islam R, Roman-Ross G, Krupp E, Feldmann J & Meharg A*

10:45 Simultaneous Analysis of Anionic Species of As, Se and Cr by HPLC-CRI-ICP-MS
A1156 *Xie Q, Furdui V & Moody WB*

11:00 Iron Phases in Soils and Softwater Lakes as Determined by EXAFS Spectroscopy
A969 *Sjöstedt C, Gustafsson JP, Persson I, Berggren Kleja D, Hassellöv M & Borg H*

11:15 Oxidation of Added Mn(II) in Soils as Observed by the Cr Oxidation Test and Mn XANES Spectroscopy
A883 *Ross D & Lanzirotti A*

21a: Urban Geochemistry

Session chaired by W. Berry Lyons & Rolf Torre Ottesen

09:30 **Keynote:** New Approaches to Identifying and Reducing Persistent Lead Exposure Pathways to Urban Populations
A292 *Filippelli G, Morrison-Ibrahim D, Liu G & Wiehe S*

10:00 Over One Hundred Years of Contamination History Reflected in Urban Lakes
A1170 *Yan B, Abrajano T, Bopp R, Chaky D & Chillrud S*

10:15 Arsenic Pollution of Groundwater in Lahore City, Pakistan
A434 *Hudson-Edwards K, Cheema K, Abbas M & Raman A*

10:30 Black Carbon in Phoenix-Area Soils: Distribution and Relationship with Land Use Across a Desert City
A385 *Hartnett H & Hamilton A*

10:45 Greenhouse Gas Emissions from a Large Metropolitan Water Reclamation Plant
A74 *Bellucci F, Carbone J, Heraty L, Sturchio N, Gonzalez-Meler M, Kozak J & O'Connor C*

11:00 Baseline Concentrations and Spatial Distribution of Heavy/Trace Elements in Soils of Medak District, Andhra Pradesh, India
A208 *Dantu S*

11:15 Pedogeochemistry Around Industrial Waste Disposal Site at Dundigal, Hyderabad City, India
A796 *Parth V, Murthy NN & Saxena PR*

Oral Presentations Overview | Fri | PM

	200-A	200-B	200-C	200-D	200-E	300-A/B	300-C/D
	18e / 18g	17f	16l	15m / 15j	22a	02b / 02a	08e / 08f
13:30	Rodger	Kirschling	Hegg	Yee	Alaabed	Furnes	Arculus
13:45	Luttge	Star	Sessions	Senko	Bhuiyan	Cates	Agostini
14:00	Alimohammadi	Tratnyek			Daneshavar	Polat	Louvel
14:15	Hamm		West	De Giudici	Eggenkamp	Souders	Gussone
14:30	Jahn	Holbrook	Bowen	Lenz	Han	Puchtel	Cruz-Uribe
14:45		Hsu-Kim			Johnson	McCallum	Bebout
15:00	van Sijl	Jafvert		Baudrand	Leslie	Shirey	Kelemen
15:15	Fulton	Kaegi		Petrash	Santini	Banerjee	Manning
15:30	Mantegazzi	Kim		Power	Tripathi	Huang	Smye
15:45	Pye	Doktycz		Roberts	Xu	Moser	Grujic
16:00	Lemke	Hull		Kim	Karakaya	Cavosie	Merschat
16:15	Liu	Apte		Chubar		Byerly	Tracy

	301-A	301-B	301-C	301-D/E	Ballroom A	Ballroom B	Ballroom C	Lecture
	14a	13d / 13e	10e / 10c	09f / 09b	03l / 03j	04f	04a	20d
13:30	Grandy	Johnson	Calmels	Kharaka	Chambers	Livi	Duckworth	Renne
13:45	Guggenberger	Slater	Ohmoto	Little		Utsunomiya	Simanova	Cassata
14:00		Hubbard	Keech	Kirste	Dwyer	Jickells	Liu	Hames
14:15	Harden	Baker	White	Vlcek	Kleine		Kretzschmar	Bengtson
14:30		Jansik	Baldini	Nielsen		Dietze		Ito
14:45	Lawrence	Rao	Little	Lassin	Nimmo	Gieré	Jun	Reiners
15:00	Heckman	Andraski	Sreenivas	Bourg	Walker	Borrok	Graham	McInnes
15:15	Keiluweit	Böhlke	Alt	Tossell	Lapen	Pourcelot	Wasylenki	Tohver
15:30				Shao	Van Orman	Cong	Loges	Stowell
15:45			Shimizu	Olsen		Tong	Yokoyama	Jourdan
16:00			de Moor	Vacquand	Bennett	Gupta	Mitsunobu	Batt
16:15			Mandeville	Ostertag-Henning	Boehler		Fleeger	Danisik

02a: Evidence of Impacts from the Early Earth

Session chaired by Aaron Cavosie & Des Moser

15:30 Impacts – The Key to Understand Earth
A428 *Huang H*

15:45 Hot Shock vs. Cold Shock Zircon Across the Vredefort Dome; A Guide for Interpreting Residua of the LHB?
A729 *Moser D, Cupelli L, Barker I & Flowers R*

16:00 Detrital Shocked Zircon
A152 *Cavosie AJ, Erickson TM, Radovan HA & Moser DE*

16:15 **Keynote:** Seven Giant Impact Fallout Layers in the 3.5 to 3.2 Ga Barberton Greenstone Belt: Evidence and Implications
A134 *Byerly GR & Lowe DR*

02b: Geodynamic and Petrogenetic Processes in the Early Earth: Insights from Greenstone Belts, TTGs, and Layered Anorthosite Complexes

Session chaired by Ali Polat, Robert Kerrich & Jonathan O'Neil

13:30 **Keynote:** Petrological and Tectonic Evolution of the Palaeoarchean Barberton Greenstone Belt, South Africa
A311 *Furnes H, de Wit M & Robins B*

13:45 Detrital Sediments of the ca. 3.77 Ga Nuvvuagittuq Supracrustal Belt, Québec (Canada)
A151 *Cates N & Mojzsis S*

14:00 Geodynamic Evolution of the Mesoarchean Fiskenæsset Anorthosite Complex, SW Greenland
A823 *Polat A, Frei R & Schersten A*

14:15 Lead Isotope Constraints on Two Archean Anorthosite Complexes, Southwest Greenland
A979 *Souders K, Sylvester P & Myers J*

14:30 Highly Siderophile Elements in the Early Earth: A Story Told by Barberton Komatiites
A834 *Puchtel I, Walker R, Robin C, Arndt N, Nisbet E, Anhaeusser C & Byerly G*

14:45 A Magmatic Record of Middle Archaean Subduction
A684 *McCallum CA & Harley SL*

15:00 Re-Os and PGE of Neoarchean Websterite Xenoliths and Diamondiferous Lamprophyres
A955 *Shirey S, Ayer J, Wyman D & Nelson W*

15:15 Archean Fluid-Rock Interaction: Oxygen and Hydrogen Isotope Ratio from Iron Ore Group, India
A48 *Banerjee S, Richards I, Ferguson K, Gregory RT & Basu AR*

Session 02a follows this session in this room.
For details see page 290.

03j: Origin and the Evolution of the Earth's Core

Session chaired by William F McDonough, Reinhard Boehler & Alexandre Corgne

15:30 **Keynote:** Experimental and Theoretical Constraints on the Chemical Evolution of the Outer Core
A1073 *Van Orman J*

16:00 Metal-Silicate Partitioning of Re
A78 *Bennett N & Brenan J*

16:15 New Insight into the Phase Diagram, Structure and Viscosity of Iron at Core Conditions
A883 *Ross M & Boehler R*

03I: The Compositions of the Earth, the Earth-Moon System, and the Terrestrial Planets

Session chaired by Hugh O'Neill & Alan Brandon

13:30 **Keynote:** Theoretical Models for Terrestrial Planet Formation
A157 *Chambers J*

14:00 **Invited:** Erosion during Accretion: Consequences for Planetary Iron-Silicate Ratios and Tungsten Isotope Anomalies
A255 *Dwyer C, Nimmo F, Asphaug E & O'Brien D*

14:15 **Medal:** Earth's Accretion and Differentiation
A522 *Kleine T, Rudge JF & Bourdon B*

14:45 Tungsten Isotopic Evolution during Late-Stage Accretion: Constraints on Earth-Moon Equilibration
A761 *Nimmo F, O'Brien D, Kleine T & Dwyer C*

15:00 Clues to the Formation of the Terrestrial Planets from Highly Siderophile Elements
A1093 *Walker R, Puchtel I, Day J, Galenas M & Brandon A*

15:15 **Invited:** Hybridized Mantle Sources of Shergottites and ALH 84001
A560 *Lapen T & Brandon A*

Session 03j follows this session in this room.
For details see page 292.

04a: Chemical and Biological Processes at Mineral Surfaces: Influence on Contaminant Dynamics

Session chaired by John Bargar, Marc Michel, David Singer & Per Persson

13:30 **Invited:** The Structure and Reactivity of Cobalt-Siderophore Complexes
A249 *Duckworth O, Bi Y, Jarzecki A & Bargar J*

13:45 Hydrolysis of Desferrioxamine-B at the Surface of Goethite in the Dark at pH 6
A963 *Simanova AA, Persson P & Loring JS*

14:00 A Combined AFM and FTIR Study of EPS-Coated Goethite
A623 *Liu X, Totsche K & Eusterhues K*

14:15 **Keynote:** Mineral Surface Processes: Key to Understanding Contaminant Dynamics
A539 *Kretzschmar R*

14:45 **Invited:** Surface-Mediated Nucleation and Growth of Iron Oxides
A485 *Jun Y-S, Waychunas G & Lee B*

15:00 Kinetics of Cr(VI) Reduction by Pyrite Surfaces at pH 4 to 9: Surface Coverage and Passivation Effects
A351 *Graham A & Bouwer E*

15:15 The Mechanism of Uranium Isotope Fractionation during Adsorption to Mn Oxyhydroxide
A1116 *Wasylenki L, Brennecka G, Bargar J & Anbar A*

15:30 REE Fractionation during Low-Temperature Water-Mineral Interaction
A628 *Loges A, Goeb S, Jacob DE, Bau M, Wagner T & Markl G*

15:45 Selective Incorporation of Arsenate into Calcite
A1188 *Yokoyama Y & Takahashi Y*

16:00 Antimony(V) Incorporation into Synthetic and Natural Fe Hydroxides
A714 *Mitsunobu S, Takahashi Y & Sakata M*

16:15 Sequestration of Cs by Na- and H-Birnessite from pH 3 to 11 as Measured with Time-Resolved Synchrotron X-Ray Diffraction
A297 *Fleeger C, Heaney P & Post J*

04f: Atmospheric Dust

Session chaired by Reto Gieré, Bernard Grobéty & Peter Stille

13:30 Mn in Welding Fume: Characterization and Exposure Biomarkers
A627 *Livi K, Richman J & Geyh A*

13:45 Chemical State of Fe in Fine and Ultrafine Particles in the Urban Atmosphere
A762 *Nishita C, Kogawa M & Utsunomiya S*

14:00 **Keynote:** Atmospheric Dust Inputs To The Oceans
A467 *Jickells T & Baker A*

14:30 **Invited:** Passive Sampler Technique Sigma-2 with Automated Microscopic Real Color Image Processing for Particle Measurements in the Size Range from 2.5-80 µm
A233 *Dietze V, Kaminski U, Gieré R, Goldenberg E, Stille P, Grobéty B & Neururer C*

14:45 Chemical and Isotopic Properties of Airborne Particles in Urban and Rural Environments of the Rhine Valley
A360 *Guéguen F, Stille P, Dietze V, Millet M & Gieré R*

15:00 **Invited:** Zinc Isotopes of Particulate Matter from the Combustion of Coal and a Coal+Tire-Derived Fuel Blend
A107 *Borrok DM, Landa ER, Ren M & Gieré R*

15:15 **Invited:** Studies of Airborne Radionuclides in the Vicinity of a Nuclear Facility
A827 *Pourcelot L, Masson O, Renaud P, Van Hecke W & Gieré R*

15:30 **Invited:** Geochemical Properties of Aerosol in Lhasa, Central Tibetan Plateau
A187 *Cong Z, Kang S, Huang J & Li X*

15:45 Alternation of Cloud Chemistry by Dust Particles
A1049 *Tong D, Byun D, Saylor R, Mathur R & Young J*

16:00 Assesment of Factors Responsible for Climate Change and Human Health
A366 *Gupta S*

08e: The Eclogite – Arc Magma Connection: Linking Metamorphic and Igneous Processes at Subduction Zones

Session chaired by Maureen Feineman, Sarah Penniston-Dorland, Alicia Cruz-Uribe & Jeffrey Ryan

13:30 **Keynote:** Deciphering Slab Inputs from Arc Outputs
A31 *Arculus R*

13:45 **Invited:** Mantle Wedge and Slab Fluids in Eastern Mediterranean Arc Magmas
A5 *Agostini S, Tonarini S & Manetti P*

14:00 Zr Mobilization and Complexation in Subduction Zone Fluids
A632 *Louvel M, Sanchez-Valle C, Malfait WJ, Testemale D & Hazemann J-L*

14:15 **Invited:** Calcium Isotopes as Tracers of High-Pressure Subduction-Zone Fluid-Rock Interaction
A367 *Gussone N, John T, Beinlich A & Bebout G*

14:30 REE Mobility in Subduction Fluids: An Example from Franciscan Eclogite
A198 *Cruz-Uribe A & Feineman M*

14:45 Fate of Volatiles and Fluid-Mobile Elements in Forearcs: Some Metamorphic Avenues for Subduction-Zone Chemical Flux
A66 *Bebout G*

15:00 **Invited:** Bulk Composition of UHP Metasediments and Recycling of the Sediment Component in Arc Magmas via Diapirs
A503 *Kelemen P, Behn M, Crowley M, Hacker B & Massonne H*

15:15 **Keynote:** Influence of Mantle-Wedge Flow on the Composition of Fluids Released by Subducting Slabs
A665 *Manning C*

Session 08f follows this session in this room.
For details see page 297.

08f: Linking Sample-Scale Metamorphism with Orogen-Scale Processes: Applications to and Results from Thermo-Mechanical Modeling

Session chaired by Jennifer Chambers & Mark Caddick

15:30 Rapid Formation and Exhumation of Eclogites in the Eastern Alps
A974 *Smye A, Bickle M, Holland T, Parrish R, Condon D, Horstwood M & Cottle J*

15:45 **Keynote:** Dating the Depths of the Himalayan Orogen
A358 *Grujic D, Warren C & Wooden J*

16:00 Age and Distribution of Southern Appalachian Metamorphism Delimited by SHRIMP U-Pb Metamorphic Zircon Ages
A701 *Merschat AJ, Hatcher RD, Bream BR & Miller CF*

16:15 Contact Overprinting of Regional Metamorphism, New York
A1052 *Tracy R & Dorfler K*

09b: Geochemistry of Non-Hydrocarbon Gases in Energy Systems

Session chaired by Alain Prinzhofer, Yongchun Tang & Richard Worden

16:00 Characterization of Natural Hydrogen Sources in Ophiolitic Context
A1068 *Vacquand C, Prinzhofer A & Deville E*

16:15 Reassessing Reaction Rates for TSR by Experiments and Modelling
A780 *Ostertag-Henning C, Scheeder G, Hentscher M & Bach W*

09f: Geochemistry of CO_2 Sequestration: Theory, Modeling, and Field and Laboratory Results

Session chaired by Chen Zhu, Eric Oelkers, John Kaszuba & Juerg Matter

13:30 **Keynote:** Geologic Storage of Carbon Dioxide: Potential Environmental Impacts of CO_2-organic Interactions
A511 *Kharaka YK, Campbell P, Thordsen JJ, Thomas RB, Dole DR & Hovorka SD*

13:45 Assessing Freshwater Aquifer Contamination from Carbon Capture and Storage CO_2 Leak
A608 *Little MG & Jackson RB*

14:00 Geochemical Monitoring and Geochemical Modeling of the CO_2CRC Otway Project CO_2 Storage Pilot, Victoria, Australia
A521 *Kirste D, Perkins E, Boreham C, Stalker L, Schacht U & Underschultz J*

14:15 Excess Near-Critical Adsorption of Carbon Dioxide in Porous Silica: Linking Theory, Simulations, and Experiment
A1084 *Vlcek L, Chialvo A, Rother G & Cole D*

14:30 Molecular Dynamics Simulations of CO_2-Brine Interfacial Tension and Mutual Solubility
A759 *Nielsen L, Bourg I & Sposito G*

14:45 A Thermochemical Model for CO_2-Water Interfacial Tension
A565 *Lassin A, Leroy P, Broseta D & Azaroual M*

15:00 Molecular Dynamics Simulations of Brine-Clay Interfaces: Implications for CO_2 Storage in Saline Aquifers
A110 *Bourg I & Sposito G*

15:15 A Theoretical Framework for Understanding the Capture and Sequestration of Atmospheric CO_2 by Weak Bases Like Water, Ammonia and Amines
A1050 *Tossell J*

15:30 Mineral Dissolution and Nanoparticle Evolution on Phlogopite Surfaces Under CO_2 Geologic Sequestration Conditions
A940 *Shao H & Jun Y-S*

15:45 A Predictive Model for Silicate Mineral Dissolution Rates
A776 *Olsen A, Bandstra J & Brantley S*

Session 09b follows this session in this room.
For details see page 298.

10c: Developing a Better Picture of Earth's Deep Sulfur Cycle

Session chaired by Charles W. Mandeville, Nobumichi Shimizu & Nicole Keller

15:15 **Keynote:** Sulfur Exchange between Seawater and Oceanic Basement
A15 *Alt J & Shanks W*

15:45 **Invited:** Sulfur Isotopic Variations in Mantle-Derived Magmas: Initial Observations
A953 *Shimizu N, Mandeville C, Jackson M, Yamamoto J & Kurz M*

16:00 **Invited:** Sulfur Isotope Systematics of Degassing Arc Basalts: Implications from Masaya Volcano
A222 *de Moor JM, Sharp Z, King P & Ramirez C*

16:15 **Invited:** Sulfur Isotope Variation in Arc Basalts Revealed By Secondary Ionization Mass Spectrometry Measurements of Melt Inclusions
A663 *Mandeville C, Shimizu N, Kelley K & Metrich N*

10e: Chemical and Isotopic Perspectives on Global Elemental Cycling in Modern and Ancient Systems

Session chaired by Matthew Fantle & Edward Tipper

13:30 **Invited:** Impact of Sulfide Oxidation on Continental Chemical Weathering Budgets and Global Carbon Cycle
A137 *Calmels D, Gaillardet J, Galy A, France-Lanord C, West AJ, Bickle MJ & Hovius N*

13:45 Geochemical Cycles of Fe, Mo, U, Cu, Cr, REEs, and S during the Period 3.5 – 3.2 Ga ago
A774 *Ohmoto H, Bevacqua D, Johnson I & Watanabe Y*

14:00 Isotopic Fractionation of Mo, Cu and Zn during Weathering: The Record from Soils and Rivers
A502 *Keech AR, Vance D, Archer C, Foster GL, Hudson G & Blum JD*

14:15 Stable Isotopic Evidence of Climate-Driven Changes in Methane Cycling in Northern Peatlands
A1128 *White J, Shannon R, Weltzin J, Pastor J & Bridgham S*

14:30 Identifying the Link between Climate and Trace Element Concentrations in Cave Deposits Using a Daily-Scale Cave Drip Water Dataset
A43 *Baldini J, McDermott F, Baldini L & Clipson N*

14:45 Copper Isotope Fractionation in Seawater: The Role of Scavenging by Ferromanganese Crusts
A608 *Little S, Vance D, Sherman D & Hein J*

15:00 Fe Isotope Compositions of Manganese Nodules of Central Indian Basin
A985 *Sreenivas B, Nagender Nath B, Vineesh PC, Bhaskar Rao YJ, Vijaya Gopal B & Babu EVSSK*

Session 10c follows this session in this room.
For details see page 300.

13d: Geophysical Monitoring of Near-Surface Hydrogeochemistry

Session chaired by Gregory S Baker, Susan Hubbard & Lee Slater

13:30 Electrical Geophysical and Geochemical Monitoring of *in situ* Enhanced Bioremediation

A474 *Johnson T, Versteeg R, Day-Lewis F, Wright K, Major W & Lane J*

13:45 Multi-Scale Measurement and Monitoring of CH_4 Dynamics in Peatlands Using Geophysical Methods

A971 *Slater L, Comas X, Parsekian A, Nolan J, Reeve A & Glaser P*

14:00 Hydrogeophysical Quantification of Plume-Scale Flow Architecture and Recharge Processes

A433 *Hubbard S, Watson D, Baker G, Chen J, Kowalsky M, Gasperikova E, Gaines D, Smith M & Brooks S*

14:15 Time-Lapse Electrical Resistivity Tomography (ERT) Monitoring of *in situ* Hydrogeochemical Changes Associated with an Emulsified Vegetable Oil Injection for Bioreduction of Uranium(VI)

A42 *Baker G, Hubbard S, Watson D, Gasperikova E, Wu Y & Brooks S*

Session 13e follows this session in this room.
For details see page 303.

13e: Formation Mechanisms, Stability, and Distribution of Oxyanions in the Environment

Session chaired by W. Andrew Jackson, Neil Sturchio, Baohua Gu & John Karl Bohlke

14:30 Impact of Mobile-Immobile Water Domains on the Retention of Technetium (^{99}Tc) in Unsaturated Soils
A459 *Jansik D, Wellman D, Cordova E & Wildenschild D*

14:45 Understanding Natural Perchlorate Formation by Ozone and UV-Oxidation of Aqueous cl Species
A848 *Rao B, Jackson A, Bohlke JK, Hatzinger P, Gu B & Sturchio N*

15:00 Factors Affecting the Distribution of Natural Perchlorate in Desert Soils
A21 *Andraski B, Jackson A, Stonestrom D & Welborn T*

15:15 **Keynote:** Isotopic Variation in Terrestrial Perchlorate and Associated Nitrate
A100 *Böhlke JK, Jackson WA, Hatzinger P, Sturchio N & Gu B*

14a: Organo-Mineral Interactions in the Critical Zone: Mineral Weathering and Carbon Stabilization in Soil

Session chaired by Erika Marin-Spiotta, Jon Chorover, Craig Rasmussen, Lixin Jin, Amanda Olsen & Elisabeth Hausrath

13:30 Biological and Biochemical Pathways of Litter Decomposition and Soil Carbon Stabilization
A351 *Grandy S & Wickings K*

13:45 **Keynote:** Mineral Control on Organic Carbon and Nitrogen Biogeochemistry
A361 *Guggenberger G, Mikutta R, Chadwick O, Chorover J, Kaiser K, Kramer M & Vollmer A*

14:15 **Keynote:** The Role of Disturbance in the Regulation of Carbon Exchange by Soils
A381 *Harden J & Lawrence C*

14:45 Toward a Model Framework for Evaluating the Long-Term Capacity of Soils to Sequester Carbon
A568 *Lawrence C & Harden J*

15:00 The Enigmatic "Occluded" C Fraction
A394 *Heckman K, Rasmussen C & Knicker H*

15:15 C and N Dynamics in Soil Microstructures: A Joined STXM/NEXAFS and NanoSIMS Approach
A502 *Keiluweit M, Nico PS, Zeglin LH, Pett-Ridge J, Weber P, Myrold DD & Kleber M*

15j: The Role of Microorganisms in Promoting Carbonation Reactions

Session chaired by Gordon Southam & Christopher R. Omelon

15:00 Diagenesis of Gypsum
A60 *Baudrand M, Aloisi G, Martineau F, Fourel F, Lécuyer C, Pancost R, Blanc-Valleron M-M, Rouchy J-M, Aref MAM & Grossi V*

15:15 Microbially-Catalyzed Cementation of Modern Gypsum-Dominated Thrombolites
A811 *Petrash D, Lalonde S, Pecoits E, Gingras M & Konhauser K*

15:30 Modern Thrombolites from an Asbestos Open Pit Pond
A828 *Power I, Wilson S, Dipple G & Southam G*

15:45 The Role of Archaea in Low Temperature Dolomite Formation
A873 *Roberts J, Kenward P, Fowle D & Kinnebrew N*

16:00 Investigation of Microbial Calcification in Laduk Spring, Yellow Stone National Park by Transmission Electron Microscopy
A516 *Kim J, Kogure T & Geesey G*

16:15 Manganese Carbonates Formation during Long-Term Sorption of Mn^{2+} by Viable *Shewanella putrefaciens*
A179 *Chubar N, Behrends T, Avramut C & Van Cappellen P*

15m: Microbial Biominerals: Structure, Formation and Applications

Session chaired by Danielle Fortin, Vernon Phoenix & Rizlan Bernier-Latmani

13:30 **Invited:** Reduction of Hg(II) to Hg(0) by Biogenic Magnetite
A1184 *Yee N, Parikh M, Lin C-C, Kukkadapu R & Barkay T*

13:45 **Keynote:** Formation and Transformation of Fe- and S Phases by an Acid-Tolerant Sulfate Reducing Desulfosporosinus Species
A934 *Senko J & Bertel D*

14:15 Occurrence of Hydrozincite Biomineralization in Naracauli (Sardinia, Italy): Structural Properties and Morphological Features
A217 *De Giudici G, Medas D, Podda F, Lattanzi P, Cidu R & Wanty RB*

14:30 The "Bio" in Biominerals – Identification of Proteins Associated to Microbially Produced Selenium Particles
A581 *Lenz M, Kolvenbach B, Gygax B, Moes S & Corvini P*

Session 15j follows this session in this room.
For details see page 305.

16I: Bridging Isotope Effects in Cellular Metabolism to Environmental Scale Tracer Studies

Session chaired by Eric Hegg & Helen Kreuzer

13:30 **Invited:** A Stable Isotope-Based Model of Intracellular Water Dynamics
A394 *Hegg E & Kreuzer H*

13:45 **Keynote:** The Importance of Metabolism for Lipid D/H Ratios
A936 *Sessions A, Zhang X & Gillespie A*

14:15 **Invited:** Dissecting the Large-Scale Spatiotemporal Variation in *Ricinus communis* (Castor Bean) Seed Oil δ^2H
A1127 *West J, Kreuzer H & Ehleringer J*

14:30 **Invited:** Patterns and Pathways of H and O Isotope Incorporation in Keratin and Chitin
A112 *Bowen G, Nielson K, Cerling T & Ehleringer J*

17f: Biotic and Abiotic Transformations and Effects of Manufactured Nanomaterials – Applied Environmental Aspects

Session chaired by Gregory V Lowry, Jamie Lead, Mark Wiesner & Kelvin Gregory

13:30 Bioavailability of Polymer Nanoparticle Coatings
A520 *Kirschling T, Golas P, Tilton R, Gregory K & Lowry G*

13:45 **Invited:** Environmental Bioremediation of Carbon Nanotubes via Enzymatic Catalysis
A989 *Star A*

14:00 **Keynote:** Kinetic Aspects of the Transformation of Nanoparticles in the Environment
A1053 *Tratnyek P*

14:30 Titanium Distribution in a Swimming Pool – The Case for Dissolution
A410 *Holbrook RD, Motabar D, Quinones O, Stanford B & Snyder S*

14:45 **Invited:** Sorption of Natural Organic Ligands to Silver and Zinc Sulfide Nanoparticles: Implications for Aggregation and Dissolution
A422 *Hsu-Kim H, Gondikas A, Deonarine A, Masion A & Auffan M*

15:00 **Invited:** Photochemical Reactions of Manufactured Carbon Nanomaterials in the Aquatic Environment
A454 *Jafvert C, Chen C-Y & Hou W-C*

15:15 Behavior of Silver Nanoparticles in a Waste Water Treatment Plant
A488 *Kaegi R, Voegelin A, Zuleeg S, Sinnet B, Eugster J, Burkhardt M & Siegrist H*

15:30 Nanoparticles in Biosolid Products as Revealed by Electron Microcopy
A515 *Kim B, Park C-S, Murayama M & Hochella M*

15:45 **Invited:** Microbial Interactions with Engineered Metal and Metal Oxide Nanoparticles
A239 *Doktycz M, Suresh A, Wang W, Brown S, Gu B, Allison D, Joy D, Moon JW, Phelps T & Pelletier D*

16:00 **Invited:** Uptake and Biotransformation of Gold Nanoparticles by a Freshwater Bivalve
A437 *Hull M, Chaurand P, Rose J, Jones J, Gloe K & Vikesland P*

16:15 Why is Nanoparticulate CeO_2 Toxic to Aquatic Algae?
A29 *Apte S, Rogers N, Franklin N, Angel B, Batley G, Lead J & Baalousha M*

18e: Modeling of Nucleation and Growth Processes in Aqueous Environments

Session chaired by Devis Di Tommaso & Sebastien Kerisit

13:30 **Keynote:** Simulating Crystal Nucleation: Seeing the Infrequent with Molecular Dynamics
A875 *Rodger M, Quigley D, Harding J & Freeman C*

13:45 **Invited:** Kink Site Reaction Kinetics: A New Model Unifies Crystal Dissolution and Growth Theory
A645 *Luttge A & Arvidson R*

14:00 Molecular Dynamics Simulation of the Aggregation of Aqueous TiO_2 Nanocrystals
A13 *Alimohammadi M & Fichthorn K*

14:15 Impact of Carboxylated Molecules on Cation Hydration Dynamics and Implications for Calcification
A375 *Hamm L, Wallace A & Dove P*

Session 18g follows this session in this room.
For details see page 310.

18g: Extreme Aqueous Environments of Geological Relevance

Session chaired by Ariel A. Chialvo, Andrey Kalinichev & Thomas Driesner

14:30 **Keynote:** Aqueous Fluids at High Pressures and Temperatures: Insights from Molecular Simulations and Experiments
A455 *Jahn S*

15:00 Titanium Complexation in Cl- or F-Bearing High Pressure-Temperature Aqueous Fluids: New Results from *ab Initio* Molecular Dynamics
A1073 *van Sijl J, Allan NL, Davies GR & van Westrenen W*

15:15 **Invited:** XAFS Spectroscopy and Molecular Dynamics: Aqueous Ions and Ion Pairs Under Non-Ideal Conditions
A311 *Fulton J, Kathmann S, Schenter G, Bylaska E, Bogatko S & Weare J*

15:30 PVTx Properties of Sulfate-Bearing Aqueous Fluids
A665 *Mantegazzi D, Sanchez-Valle C & Driesner T*

15:45 **Invited:** Beryllium Hydration in Aqueous Solution. II. Correlation Consistent Basis Set Calculations
A836 *Pye C*

16:00 **Invited:** FT-ICR/MS and Quantum Chemical Study of the Aqueous Microsolvation of Cadmium Chloride Complexes
A580 *Lemke KH, Sadjadi SA & Seward TM*

16:15 An Synchrotron XAS Study of Speciation and Thermodynamic Properties for Aqueous Cobalt Chloride Complexes at 600 Bar and 35-440°C
A619 *Liu W, Borg S, Testemale D, Etschmann B, Hazemann J-L & Brugger J*

20d: Constructing a 4D Thermal History of the Earth Through Isotopic Chronometry

Session chaired by Geoffrey Batt & Fred Jourdan

13:30 **Keynote:** Improved Calibration of the $^{40}Ar/^{39}Ar$ Geochronometer: Consequences for Thermochronology
A861 *Renne P*

13:45 ^{37}Ar Diffusion in Pyroxene: Implications for Thermochronometry and Mantle Degassing
A148 *Cassata W & Renne P*

14:00 $^{40}Ar/^{39}Ar$ Dating of Single Muscovite Crystals
A374 *Hames W*

14:15 *Ab Initio* Calculations of He Diffusion in Apatite
A77 *Bengtson A, Ewing R & Becker U*

14:30 LA-ICP-MS U-Pb Dating Using Etched Zircons
A448 *Ito H, Tamura A, Morishita T & Arai S*

14:45 **Keynote:** Orogen-Scale Thermochronologic Trends of the Central Andes
A858 *Reiners P, Vernon A, Zattin M, Thomson S, Pearson D & Cavazza W*

15:00 U-Th-Pb-He Double-Dating of Zircon from the Diamondiferous Ellendale Lamproite Pipe, Western Australia
A688 *McInnes B, Evans N, McDonald B, Thern E & Corbett D*

15:15 Multiple Isotope Geochronology of the Permo-Triassic Araguainha Impact Crater and Implications for the Carbon Isotope Record
A1047 *Tohver E, Lana C, Cawood P, Fletcher I, Sherlock S, Jourdan F, Rasmussen B, Estrada B, Trindade R, Souza Filho C & Marangoni Y*

15:30 Sequential Pluton Emplacement, Garnet Granulite Metamorphism, and Partial Melting during Construction and Modification of Magmatic Arc Crust, Fiordland, New Zealand
A997 *Stowell H, Parker K & Gatewood M*

15:45 Challenges and Opportunities in Dating Young Tholeiitic Basalts: Example from New $^{40}Ar/^{39}Ar$ Ages from the HSDP-2 Core, Hawaii
A482 *Jourdan F, Sharp W & Renne P*

16:00 Thermochronological Insight into the Evolution of an Everted Cretaceous Basin: The Klamath Mountains of Western North America
A59 *Batt G*

16:15 Tectonothermal History of the Black Forest (Germany): A Triple Dating Approach on a Single Apatite Sample
A207 *Danisik M, Pfaff K, Evans N, Manoloukos C, Staude S, McDonald B & Markl G*

22a: General Low-Temperature Geochemistry

13:30 Origin of the Carbonate Bodies in the Mantle Peridotites of the Northern Semail Ophiolite
A9 *Alaabed S*

13:45 Geochemistry of Fluvial Sediments of Brahmaputra-Jamuna River, Bangladesh: Constraints on Tectonic, Provenance and Weathering
A86 *Bhuiyan M, Rahman M, Dampare S & Suzuki S*

14:00 Clay Mineral Grain Coating Quantification and Investigation, Ravenglass Estuary, UK
A205 *Daneshavar E & Worden R*

14:15 Fractionation of Cl Isotopes during Precipitation of NaCl from a Nearly Pure NaCl Brine
A260 *Eggenkamp HGM, Marques JM & Graça H*

14:30 The Geochemical Evolution of Ordovician Limestone Groundwater in the Coalfield of North China
A378 *Han Y, Wang G & Hu W*

14:45 Testing Climatic Controls on Speleothem Dead Carbon Fraction in a Holocene Stalagmite: Implications for Speleothem-Based Radiocarbon Calibration
A473 *Johnson K, Magana A & Hu C*

15:00 Boron Isotopic Geochemistry of the McMurdo Dry Valleys, Antarctica
A582 *Leslie D, Warner N, Vengosh A, Olesik J, Welch K & Lyons WB*

15:15 *In situ* Neutralisation of Bauxite Residue ('Red Mud') by Cross Layer Leaching with Carbonated Mud
A909 *Santini T, Hinz C, Rate A, Gilkes RJ & Carter C*

15:30 Sr and Nd Isotopic Geochemistry of the Indo-Gangetic Plains and the Role of Proximal Sources to the Building of the Floodplains
A1056 *Tripathi JK, Bock B & Rajamani V*

15:45 Geochemical Characteristics and Genesis of Sijiaoyanggou Lead-Zinc Deposits in Qinghai Province, China
A1159 *Xu G, Shao Y, Yang Z & Zhang P*

16:00 The Types of Hydrothermal Alteration and Behavior Trace Elements at Around of Eastern Black Sea Volcanites and Sulfide Deposits, Turkey
A496 *Karakaya N & Çelik Karakaya M*